

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR LETTERS PATENT

OF

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FOR

HOLDER FOR READING MATERIAL

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HOLDER FOR READING MATERIAL

BACKGROUND

Field of the Invention

The Invention is a holder for reading material allowing the observation of a book or other object upon which letters, figures or images appear. The Invention allows a person to read, view a computer screen or operate telecommunications equipment while the person is flat on his or her back with little or no head mobility, as a person who is recovering from a cervical spinal injury.

Description of the Prior Art

A person may wish to read a book or to view a computer or telecommunications screen while the person is lying on the person's back and facing upwards. The person may simply be most comfortable in that position; conversely, the person may have a physical condition that renders such a position desirable. For example, a person who has a cervical spinal injury or pathology, such as a cervical disk injury, may experience exquisite pain. Such a person may be confined to a bed, lying flat on the person's back, holding the person's neck as immobile as possible for a period of several weeks.

Prior art book or other reading material holders do not allow a reader to view a book while the person is on the persons' back and facing upwards.

SUMMARY OF THE INVENTION

The Invention is a holder for reading material. As used in this application, the term "reading material" means anything at which a person may wish to gaze, including, without limitation, books, magazines, newspapers, other printed material, handwritten material, photographs, drawings, other images, a computer screen, tablet computer, television screen or other electronic display or other telecommunications devices or equipment.

The Invention comprises a frame that is supported above a bed, reclining chair or other surface. The frame defines an opening. A book or other reading material is supported by and rests upon the frame and is visible to a person through the opening when the person is reclining on the persons' back on the surface.

An upper frame member is attached to the frame and supports an upper portion of the reading material. The upper frame member engages the frame and may be adjusted to support reading material of different sizes. The opening defined by the frame is of such a size and location as to allow the person to reach through the opening and to turn pages or to otherwise manipulate or control the reading matter.

The frame is hinged, so that the frame selectably may be folded from a first position in which the frame is used to view

the reading material to a second position in which the frame is out of the way when the person does not wish to view the reading material.

The Invention is particularly useful for persons recovering from injuries to the cervical spine, such as disk injuries or persons with pain syndromes that may relate to the spine, such as fibromyalgia. Such a person may view the reading material while lying on the horizontal surface facing up and without supporting the reading material with the person's arms and hands.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the Invention in a first position.

Fig. 2 is a plan view of the frame.

Fig. 3 is an end view of the frame.

Fig. 4 is a perspective view of the Invention in a second position.

Fig. 5 is an exploded detail cutaway view of the first hinge.

Fig. 6 is a detail plan view of the first hinge.

Fig. 7 is an exploded detail cutaway view of the second hinge.

Fig. 8 is a plan view of a first alternative frame.

Fig. 9 is a plan view of a second alternative frame.

Fig. 10 is a plan view of a third alternative frame.

Fig. 11 is an end view of the third alternative frame.

Fig. 12 is a plan view of a fourth alternative frame.

Fig. 13 is an end view of the fourth alternative frame.

Fig. 14 is a perspective view of a first alternative support member adapted to support the frame from the side.

Fig. 15 is a perspective view of a second alternative support member adapted to support the frame from behind.

Fig. 16 is a perspective view of a third alternative support member.

DESCRIPTION OF AN EMBODIMENT

As shown by Fig. 1, the reading material holder 2 supports reading material 4 above a person 6 while the person 6 is reclining on a surface 8. The surface 8 may be anything on which a person 6 may recline, such as a bed or reclining chair. The force of gravity 10 holds the reading material 4 in position on the frame 12 of the reading material holder 2.

The reading material 4 has an upper portion 14 and a lower portion 16. The upper portion 14 of reading material 4 is supported by upper frame member 18, shown by Fig. 2. The lower portion 16 of reading material 4 is supported by lower frame member 20. Upper frame member 18 and lower frame member 20 together define a first distance 22. First distance 22 defines an opening 24. Opening 24 is free of obstruction and allows the person (also referred to herein as the user or observer) to

reach through opening 24 with his or her hand to turn pages or to otherwise manipulate or control the reading material 4.

First distance 22 is user-selectable to accommodate a wide range in sizes of reading material 4. In the embodiment illustrated by Figs. 1-4, both the upper frame member 18 and lower frame member 20 are slidably connected to a vertical member 26. The slidable connection maintains upper frame member 18 and lower frame member 20 generally normal, or at generally 90 degrees, to vertical member 26. In alternative embodiments, lower frame member 20 may be fixed and not slide.

As shown by Figs. 1 and 3, lip member 28 is attached to frame 12 and prevents reading material 4 from sliding off of the upper frame member 18 and lower frame member 20. Lip member 28 also supports reading material 4 when the person 6 reaches through opening 24, tilts reading material 4 and turns a page of reading material 4.

In the embodiment illustrated by Figs. 1, 4 and 16, support member 30 comprises at least one arm 32 and base 34. Arm 32 is attached to frame 12 by first hinge 36. First hinge 36 allows frame 12 to rotate with respect to arm 32 from a first position (shown by Fig. 1) to a second position (shown by Fig. 4). In the first position, frame 12 is ready to support reading material 4 so that the reading material 4 may be observed by a person 6. In the second position, frame 12 is rotated away from

surface 8 and person 6, so that the frame does not block movement by person 6.

Detail cutaway Fig. 5 and detail plan view Fig. 6 show first hinge 36. Arm 32 defines a slot 40. An extension 42 of frame 12 extends into slot 40 and is connected to arm 32 by axle 44, allowing frame 12 to move between the first position (Fig. 1) and second position (Fig. 4) with respect to arm 32. In Fig. 5, one of sides of slot 40 is cut away to reveal the structure of extension 42.

Rotation of frame 12 with respect to arm 32 is constrained by pin 46. Pin 46 extends through the two sides of slot 40 through any of a plurality of holes 48. The user will select a pair of holes (one hole in each of sides of slot 40) through which to insert pin 46. The hole 48 pair selected by user will determine the angle 49 of frame 12 with respect to arm 32 when the frame 12 is in the first position. Selection of angle 49 automatically selects the corresponding angle when frame 12 is in the second position. Use of slot 40 and a generally circular shape for hinge 36 prevents hinge 36 from having pinch points that could injure the person 6 when the frame 12 is moved between the first and second positions and stabilizes joint 36.

In the embodiment shown by Figs. 1 and 4, the connection between base 34 and arm 32 is also a movable connection. Fig. 7 is an exploded cutaway view of second hinge 52 connecting base

34 and arm 32. Base 34 defines a second slot 54. In Fig. 7, one of the sides 56 of slot 54 is cut away to show the structure of second hinge 52. Arm 32 and the two sides of slot 54 are joined by second axle 58. Second axle 58 is secured with second nut 60. A plurality of second hinge holes 62 is arrayed on the circumference of a circle sharing its center with the center of second axle 58. A plurality of second pin holes 64 appear in the two sides of slot 54. A second pin 66 passes through second pin hole 64 and one of the plurality of second hinge holes 62, fixing the second hinge 52 in a predetermined angular position.

While a single second hinge pin hole 64 may be utilized, the result is that arm 32 has only crude adjustment for angle. Additional second hinge pin holes 64 may be arrayed so that the second hinge pin holes 64 will line up with second hinge holes 62 for different angular positions of arm 32 with respect to base 34. To ensure that fine angle adjustments are available to a user, the distance between second hinge pin holes 64 may be selected to be a fraction of the distance between second hinge holes 62. For example, if the second hinge pin holes 64 are 1.33 times further apart than the second hinge holes 62, the user will be able to select angles corresponding to the distance between the second hinge holes 62 and also to select angles corresponding to $1/3$ and $2/3$ of that distance. By placing the

second hinge holes 62 as close together as possible, fine angle adjustments are possible.

Figs. 8-13 show alternative frame 12 embodiments. Fig. 8 shows a frame 12 where the upper frame member 18 is fixed to the frame 12 and lower frame member 20 may be adjusted by a user to adjust the first dimension 22 and thus the size of opening 24. In the embodiment of Fig. 8, the user turns finger wheels 68, which turn screws 70. Screws 70 move the lower frame member 20 and lip 28 closer to or farther away from upper frame member 18. The user thereby may adjust the frame 12 to accommodate different sizes of reading matter 4. In the embodiment illustrated by Fig. 8, the upper and lower frame members 18, 20 are composed of a transparent or substantially transparent material, although non-transparent materials may be used. In addition, any other means to move the lower frame member 20 with respect to the upper frame member 18 may be used.

Fig. 9 illustrates a second alternative embodiment of frame 12. Upper frame member 18 is composed of a transparent or substantially transparent material. Upper frame member 18 engages frame 12 and slides in slots appearing in frame 12. First distance 22 may thereby be adjusted by the user 6 by sliding upper frame member 18 in the slots to accommodate varying sizes of reading material 4.

For each of the embodiments, upper frame member 18 and lower frame member 20 may be composed of opaque materials or transparent materials. Transparent materials offer the advantage of rendering the adjustment of first distance 22 less critical. Transparent materials have the disadvantage of distorting the user's 6 view of the reading material 4.

Figs. 10 and 11 illustrate an embodiment dependent upon the use of transparent materials. A transparent or substantially transparent plate 72 is mounted to frame 12. The reading material 4 is placed on the plate 72 and the user 6 observes the reading material 4 through the transparent plate 72. A fixed opening appearing in the plate 72 defines opening 24 and allows the user 6 to reach through the plate 72 and to turn pages or otherwise manipulate the reading material 4. Fig. 11 is an end view of the alternative embodiment, including transparent plate 72, frame 12 and lip 28.

In the embodiment illustrated by Figs. 1-4, vertical member 26 is generally circular in cross section and engagement between the ends of upper frame member 18 and frame 12 is necessary to prevent rotation of upper frame member 18 about vertical frame member 26. In the alternative embodiment shown by Figs. 12 and 13, vertical frame member 26 is keyed or has other than a circular cross section (such as the rectangular cross section shown by Fig. 13) so that upper frame member 18 cannot rotate

about vertical frame member 26. In such an embodiment, frame 12 may be abbreviated and vertical frame member 26 may serve the structural function of supporting the lower frame member 20, lip 28, and hence both the upper and lower portions 14, 16 of reading material 4. In the embodiment illustrated by Figs. 12 and 13, upper frame member 18 is slidably connected to vertical member 26, thereby maintaining upper frame member 18 generally normal to vertical frame member 26 and allowing user to adjust first dimension 22.

Figs. 14 and 15 show alternative support members 30 for supporting frame 12. In Fig. 14, a floor plate 76 rests on the floor. Column 78 extends upward from floor plate 76. Adjuster 80 allows the height of the column 78 to be adjusted. Column 78 bends from the vertical to the horizontal, supporting frame 12 by rotatable supports 82. Frame 12 supports reading material 4 against the pull of gravity. The embodiment illustrated by Fig. 14 allows the apparatus to be mounted beside the person 6, as beside a bed or a reclining chair.

Support member 30 as shown by Fig. 15 comprises a floor plate 76 and column 78 with height adjuster 80. Column 78 bends from the vertical to the horizontal and is connected to and supports frame 12 by rotatable supports 82. Frame 12 supports reading material 4. The embodiment of Fig. 15 allows the apparatus to be placed behind the person 6, such as behind a bed

or a reclining chair. Additional adjustments for angle and extension may be provided to further control the location of frame 12 with respect to floor plate 76, and hence to control the location of reading material 4 with respect to person 6.

Figs. 1 and 4 illustrate an embodiment suitable for mounting on a headboard of a bed, by placing base 34 so that blades 74 straddle the headboard. Fig. 16 illustrates additional structure allowing the embodiment shown by Figs. 1 and 4 to be used in situations where no suitable headboard is available. Floor plate 76 rests on the floor. Rectangular column 84 extends upward from floor plate 76. Blades 74 of base 34 straddle rectangular column 84, supporting base 34.

In describing the above embodiments of the invention, specific terminology was selected for the sake of clarity. However, the invention is not intended to be limited to the specific terms so selected, and it is to be understood that each specific term includes all technical equivalents that operate in a similar manner to accomplish a similar purpose.